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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/009,733	05/01/2002	Jean-Jacques Braconnier	022701-978	6028

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EXAMINER

METZMAIER, DANIEL S

ART UNIT PAPER NUMBER

1712

DATE MAILED: 01/12/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/009,733	Applicant(s) BRACONNIER, JEAN-JACQUES	
	Examiner Daniel S. Metzmaier	Art Unit 1712	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 September 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 and 19-29 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 2, 4, 5, 11-14, 16, 17, 19 and 25-29 is/are rejected.
- 7) ☒ Claim(s) 3, 6-10, 15 and 20-24 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>9/24/04</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claims 1-17 and 19-29 are pending.

Claim interpretation

1. The claims set forth sols and methods of making said sols. Claims 1, 14 and 29 are independent. Claim 1 is directed to cerium orthophosphate sols, claim 14 to lanthanum orthophosphate sols and claim 29 sols comprising cerium orthophosphate particles and lanthanum orthophosphate particles. The sols of claims 1 and 29 require an "acid other than phosphoric acid" and "a cerium salt of which is soluble in water". Claim 14 further requires the acid have a pK_a of at least three.

"During patent examination, the pending claims must be 'given *>their< broadest reasonable interpretation consistent with the specification.' ". See MPEP 2111. The specification (page 4, lines 7-9 of the instant specification) sets forth the acid as follows: "Examples which can be cited are nitric acid, acetic acid, formic acid, citric acid and propionic acid. The acid can be present in any form, dissociated or undissociated." Applicants response provides a list of record of conjugate acid-base pairs showing the pK_a of HNO_3 to be -1.4 . Said list also shows acid base pairs for the acid NH_4^+ having a pK_a of 9.24 and H_2O having a pK_a of 15.74.

Various acid-base pairs would be present in the aqueous sol systems in equilibrium. The claims lack any limitation of the concentration of the specific components and except for claims 3 and 15, do not define the acid species.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

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The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claim 29 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Applicants direct attention to page 3, line 17, and the original claims as support for the amendments. While the original claims and the specification support mixed lanthanide oxide particles, it is unclear wherein the original disclosure provides basis for mixtures of particles consisting of one rare-earth-consisting of cerium and particles consisting of one rare-earth-consisting of lanthanum. Page 3, line 17, of the original specification sets forth "mixed cerium and lanthanum phosphates (La,Ce)PO₄". The original claims set forth: "particles of a phosphate of at least one rare earth selected from cerium and lanthanum".

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 14, 16-17, 19 and 25-27 are rejected under 35 U.S.C. 102(b) as being anticipated by Boakye et al, "Porous Aluminum Oxide and Lanthanum Phosphate Fiber Coatings" (of record). Boakye et al (page 54, lines 10-19, particularly lines 16-19)

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disclose lanthanum phosphate sols employing nitric acid in addition to the lanthanum phosphate. The pH would have been expected to have been inherent based on the buffering action of the diammonium phosphate. The particle characterization of claim 17 would have been expected to have been inherent as a known characterization of lanthanide phosphate particles. Attention is further directed to Figure 5a of Boakye et al, wherein the coating thickness is less than the applicants' maximum particles limitation. Ammonium ion and diammonium phosphate clearly have a pK_a of at least 3.

The orthophosphates are the most highly hydrated form in contrast to the less hydrate forms, such as metaphosphates. Since the materials are made by related processes and said particles are peptized with nitric acid, a strong mineral acid, said particles would have been expected to have been orthophosphates due to the aqueous process. Furthermore, Boakye et al characterizes the structure as $LaPO_4$, which have been interpreted as lanthanum orthophosphate.

Since the sol compositions may function without modification as a polishing agent, anti-corrosion agent or a anti-UV agent, claims 25-27 are not deemed to distinguish the particulate sols made in the Boakye et al reference since the function would have been inherent.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Boakye et al, "Porous Aluminum Oxide and Lanthanum Phosphate Fiber Coatings" (of record).

Boakye et al discloses sols as set forth in the above anticipation rejection.

To the extent the Boakye et al reference differs from claim 16 in the pH, some variation in the pH is within the skill level of one having ordinary skill in the art at the time of applicants' invention for the advantage of stabilizing the compositions against solubilization at highly acidic environments and the complete conversion to hydrous oxides in highly alkaline environments.

9. Claims 1-2, 4-5, 11-13 and 28-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Boakye et al, "Porous Aluminum Oxide and Lanthanum Phosphate Fiber Coatings" (of record), as applied to claims 14-17 above, and further in view of Hunt et al, US 5,858,465. Boakye et al (page 54, lines 10-19, particularly lines 16-19) disclose lanthanum phosphate sols employing nitric acid in addition to the lanthanum phosphate as set forth in the above anticipation rejection.

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Boakye et al differs from claims 1-5 and 12-13 in the disclosure of lanthanum phosphates rather than the claims cerium phosphates.

Hunt et al (column 7, lines 35-55) discloses the use of lanthanum and/or cerium phosphates in fiber coatings and their advantageous anti-corrosion properties and refractory properties.

These references are combinable because they teach lanthanide phosphates. It would have been obvious to one of ordinary skilled in the art at the time of applicants' invention to employ cerium phosphate in the compositions of Boakye et al as an obvious functional equivalent to the lanthanum phosphate as clearly recognized in the art in fiber coatings for their advantageous anti-corrosion properties and refractory properties. The similar properties of lanthanum and cerium are well within the ordinary skilled in the art at the time of applicants' invention as is evidenced by their disclosed use together and the known difficulties in separating them.

10. Claims 12 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Boakye et al, "Porous Aluminum Oxide and Lanthanum Phosphate Fiber Coatings" (of record), as applied to claims 1-2, 4-5 and 11-13 and 14, 16-19 and 25-27 above, and further in view of Shoji et al. XP-002129788. While the foregoing combination of Boakye et al doesn't disclose the use of their sols in or as anti-corrosion agent compositions, it would further have been obvious to one skilled in the art at the time applicant's invention was made to use the sols of Boakye et al, in or as a convenient vehicle for applying corrosion-inhibiting coatings of La and/or Ce phosphate to metal sheets as disclosed by Shoji et al.

Allowable Subject Matter

11. Claims 3, 6-10, 15 and 20-24 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

12. Applicant's arguments filed September 24, 2004 have been fully considered but they are not persuasive.

13. Applicants (pages 10-13) assert that the nitric acid has a pK_a of -1.4 and therefore the claims are now free of the prior art. Claim 1 does not define the pK_a of the acid other than phosphoric acid. The rejected claims define an acid other than phosphoric acid as having a pK_a of at least 3. As shown by applicants' evidence (March reference), this may include a multitude of species within the system that are expected to be in equilibrium. The claims do not define the concentration of the acid, but merely its presence.

Furthermore, the conjugate acid as ammonium cation resulting from the dissolution of the diammonium hydrogen phosphate meets the broad limitation of an acid having a pK_a of at least 3. Said conjugate acid has a pK_a of about 9. Also, applicants' (page 11 and 12) arguments regarding the claim to orthophosphates has not been shown to be distinct from the prior art relied. It is suggested applicants incorporate said acid species into the independent claims.

14. Applicants (pages 12 and 13) the reference compositions must necessarily have the claimed pH. The formation of lanthanum phosphates employing ammonium

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phosphate is a known process. See Kehl et al, US 3,752,878, at column 5, wherein the pH is known to vary. The Boakye et al reference teaches varying the ratio of La:PO₃ from 1:3, which requires an excess of diammonium hydrogen phosphate. Diammonium hydrogen phosphate is a well known buffer and the excess buffer would have been expected to have buffered the nitric acid. An excess of 1:3 of La:PO₃ would have resulted in a diammonium hydrogen phosphate in excess of 0.4 and 0.6 M. Since the Office can not determine the exact pH, and the alkaline diammonium hydrogen phosphate and nitric acid would have a buffering action in the concentrations employed, the pH would have been expected to be at least 4.

Furthermore, "Where applicant claims a composition in terms of a function, property or characteristic and the composition of the prior art is the same as that of the claim but the function is not explicitly disclosed by the reference, the examiner may make a rejection under both 35 U.S.C. 102 and 103, expressed as a 102/103 rejection". See MPEP 2112.

15. Applicants arguments (page 13, regarding the pH in claim 14 are not understood.

16. Applicants (pages 14 and 15) arguments regarding nitric acid are addressed above. See the claim interpretations, rejections and above remarks.

17. Applicants (pages 15 and 16) assert the Hunt and Boakye et al references are not combinable since they employ difference compositions and methods for deposition. Both references teach coating optical fibers and the use of lanthanum and/ cerium therefore. Once said fibers are coated, they are heat treated and no longer have the properties of the raw materials as such. Furthermore, lanthanum and cerium are well

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known to be structurally similar and have similar properties as adjacent lanthanides in the periodic table or elements. The use of cerium in the compositions of the Boakye et al reference logically flows from the use of lanthanum therein based on the Hunt et al references and the knowledge in the art of their similar properties and utilities.

18. Applicants (pages 17 and 18) arguments regarding the particle size have not been deemed persuasive since applicants have not shown a basis for their conclusion that the particles may all lay in elongated form on the surface of a substrate as alleged resulting in a larger particle size. A homogeneous distribution of particles would present at least some particles in a nonparallel arrangement to the substrate.

19. Applicants assert the secondary references do not overcome the alleged deficiencies of the primary reference. The secondary references are cited as set forth above. It is not agreed the primary reference has any deficiencies as alleged.

20. Applicants assert the Shoji et al reference employs phosphoric acid and therefore teaches away from the claims. This has not been deemed persuasive since the broad claims read on any acid other than phosphoric acid or any acid other than phosphoric, which has a pKa of at least 3. This includes water as shown by applicants evidence to the March reference.

Conclusion

21. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

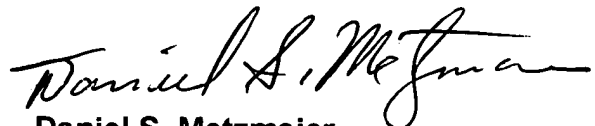
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel S. Metzmaier whose telephone number is (571) 272-1089. The examiner can normally be reached on 9:00 AM to 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy P. Gulakowski can be reached on (571) 272-1302. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, reading "Daniel S. Metzmaier". The signature is fluid and cursive, with the first name "Daniel" and last name "Metzmaier" clearly distinguishable.

Daniel S. Metzmaier
Primary Examiner
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DSM